



Understanding Cross Currency Swaps

A Guide for Microfinance
Practitioners

Cross Currency Swaps

Use: A Currency Swap is the best way to fully hedge a loan transaction as the terms can be structured to exactly mirror the underlying loan. It is also flexible in that it can be structured to fully hedge a fixed rate loan with a combined currency and interest rate hedge via a fixed-floating cross currency swap.

In a non-deliverable swap (NDS) there is no physical exchange of the two currency flows. Instead, the USD equivalent of the local currency payment (determined at the spot rate on the date of the payment) will be set against the opposite USD payment, with the net paid to the appropriate party. NDSs are used to avoid transfer risk and to avoid the cost of local market exchange. MFX will contract primarily on an NDS basis.

There are three components in a Cross Currency Swap and the mechanics are as follows: (Opposite USD cash flows will be settled on a net basis.)

For an MIV lending in local currency:

- **Initial exchange:** The MIV makes the initial loan in local currency or in dollars which the MIV immediately exchanges for local currency.
- **Periodic Exchanges:** The MIV receives local currency repayments (or the USD equivalent) on its local currency loan and pays them to MFX while retaining its profit spread. In exchange it receives a dollar payment at the agreed LIBOR rate.
- **Final Exchange:** The MIV receives the principal repayment in local currency (or USD equivalent) and pays it to MFX. MFX pays the MIV the dollar amount calculated at the initial exchange rate for the start of the contract.

For an MFI hedging hard currency exposure:

- **Initial Exchange:** The MFI exchanges the principal of the loan in hard currency for a local currency principal amount with MFX. The exchange of principal is done at market rates i.e. the spot rate as of the effective date of the swap.
- **Periodic Exchanges:** Over the life of the loan, the MFI makes interest payments on the local currency principal amount to MFX, and in exchange receives the interest amounts due on the hard currency loan.
- **Final Exchange:** At maturity, the MFI repays the principal amount in local currency to MFX and in turn receives the hard currency principal amount owed to its lender at the same exchange rate that is used for the principal at the inception of the swap.

Pricing: For a floating-floating currency swap where only the exchange rate is hedged, a market exchange rate (typically, the spot rate as of the effective date of the swap) is used to convert the payment amounts of the local currency into the target currency. The same exchange rate is used for the final principal exchange in the swap.

Interest rate swap terms (fixed for floating) are set so market participants are indifferent between paying (receiving) this fixed rate over time or paying (receiving) a rate that can

fluctuate over time. Therefore at origination, the value of the swap equals zero and the present value of the two (expected) cash flow streams equal each other.

The following formula calculates a theoretical rate (known as the "Swap Rate") for the fixed component of the swap contract.

$$\text{Theoretical_Swap_Rate} = \frac{\text{Present_value_of_future_floating_rate_cashflow}}{\sum_{t=1}^N \text{Notional Principal} \times \frac{\text{days}_t}{360} \times df_t}$$

Measuring the current market value of an interest rate swap can be complicated as it involves determining a discount rate, a yield curve and a swap rate. Market variables that affect swap pricing include changes in the level of interest rates, changes in swap spreads, changes in the shape of the interest rate yield curve, and exchange rates. MFX will use standard valuation models for valuing interest rate swaps that match the valuations on its matching swap contracts with TCX and bank counterparties.

Illustrative Transaction

Sample Swap Transaction

MFX's preferred transaction scenario is a non-deliverable swap with all payments made on a net basis in dollars/euros offshore with the client on one side and TCX on the other. MFX will also develop the capability to do deliverable swaps where it will assume transfer risk and conversion costs. There will be some pricing adjustment for deliverable swaps which will be directly related to the additional costs MFX incurs and the level of transfer risk in the transaction. The following example assumes the MIV lender also structures a local currency loan payable in dollar equivalents but this is not required if the MIV prefers to assume the conversion risk.

Notional terms for a back-to-back non-deliverable swap (fixed-for-floating)

Loan:

Currency: Ghanaian Cedi

Amount: \$2 million

Term: 3 yr, semi-annual interest payments

Rate: 25% fixed rate

Loan Payment: Dollars to be converted at spot rate

Repayments: Dollar equivalent of local currency amount, converted at spot rate 2 days prior to payment date, credited to lender's \$ account.

MIV-MFX swap:

Notional Swap Amount: \$2 million

MIV pays Cedi leg/MFX pays dollar leg

Interest rate for Cedi leg: 25.0% fixed

Interest rate for \$ leg: USD 6-month LIBOR plus 2.5 points

Cedi principal amount: Cedi equivalent of \$2 million on day swap contract begins.

Cedi semi-annual interest amount: 25.0% times the Cedi principal amount divided by 2, converted to dollars 2 days prior to payment.

Dollar semi-annual interest amount: \$2 million times the current 6-month LIBOR plus 2.5 points divided by 2.

Terms: On each interest repayment date, the MIV pays (or, if negative, receives) the difference between the Cedi interest amount and the dollar interest amount. On the repayment date the MIV pays (or, if negative, receives) the difference between the original CEDI principal amount and the \$2 million, converted to dollars 2 days prior to payment.

MFX-TCX Swap:

Notional Swap Amount: \$2 million

MFX pays Cedi leg/TCX pays dollar leg

Interest rate for Cedi leg: 25.0%

Interest rate for \$ leg: USD 6-month LIBOR plus 3.0 points.

Cedi principal amount: Cedi equivalent of \$2 million on day swap contract begins.

Cedi semi-annual interest amount: 25.0% times the Cedi principal amount divided by 2, converted to dollars 2 days prior to payment.

Dollar semi-annual interest amount: \$2 million times the current 6-month LIBOR plus 3.0 points divided by 2.

Terms: On each interest repayment date, MFX pays (or, if negative, receives) the difference between the Cedi interest amount and the dollar interest amount. On the repayment date MFX pays (or, if negative, receives) the difference between the original CEDI principal amount and \$2 million, converted to dollars 2 days prior to payment.

Under this swap arrangement the MIV receives an assured USD LIBOR plus 2.5 points return.. MFX makes a 0.50 points spread above TCX's swap price to cover credit risk regardless of what happens with currency or interest rates. TCX makes or loses money depending on whether or not the cumulative interest rate spread between the Cedi rate and LIBOR is greater than any loss from currency depreciation. The basic swap price is set by TCX.

Swap Pros	Swap Cons
Client is fully hedged against foreign exchange risks in terms of both principal and coupons as the swap locks in current market rate	Liability risk as well as interest rate risk i.e. swap payments are due when floating rate on the payment leg is higher than that the receiving leg
No upfront cost	Highly credit intensive
Swap arrangements reduce or eliminate convertibility risk and transfer risk	Swap arrangements expose users to interest rate risk and credit risk
